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Calculation of Changes of Parameters for a Deposit Northern Nishon on the Basis of the System Analysis of a Gazo-Water Filtration

B. B. Ergashev
Associate prof., NIET and ASU

D. Jurayev
Master student, NIET and ASU

Abstract: *In the article the received results on the whole fields on the basis of functional dependence for definition of parameters of conductivity, porosity and capacity of a deposit of Northern Nishon are resulted.*

The management processes of the development of such complex systems are suitable for continuous or discrete processes, which lead to the optimization problem based on the construction of economic-mathematical models of the objects of development, with systems of private derivative linear and nonlinear complex equations satisfying the initial, boundary and internal conditions. is expressed by equations. Building such models is a very difficult task, it is very difficult to solve a large-scale system of complex equations, to express specific technological processes in a multi-level system, and to search for the global optimality of such systems.

In recent years, Uzbek and foreign scientists have created mathematical models, calculation algorithms and software packages that allow solving the problems of gas field development under various conditions. Nevertheless, the problems of creating an object-oriented software environment using modern computers on the basis of mathematical models and calculation algorithms created for optimal control, prediction and analysis have not been completely solved, and the shortcomings of mathematical hardware and programming systems are still one of the main problems of research.

It is necessary to create an information device that allows controlling the rate of use of a gas field under different conditions in order to manage complex processes occurring in formation conditions, to predict the condition of the object, to perform motion analysis. An analysis of the existing works to date shows that the scope of work to be done in this area is very large. Especially in real-time, algorithms are required to perform extremely fast and reliably. These are mainly related to the creation and application of modern information technologies and algorithms that work in the regime of real gas fields.

Processes of unsteady gas filtration or fluid movement in a layer are expressed in the form of a parabolic-type differential equation. Since it is not possible to obtain an analytical solution of boundary value problems for differential equations of multidimensional parabolic type, various numerical calculation methods have been created in the following years. This is related to the creation and development of rapid EDMs. Numerical methods and personal computers allow solving many practical problems, as well as problems in the form of multidimensional differential equations of the parabolic type. For the theoretical analysis and practical application of the development of oil and gas fields, it is enough to look at the numerical solution of the two-dimensional equation of the parabolic type. In fact, during the development of natural gas fields, the filtration processes that occur in the layer are described in three-dimensional Euclidean space in terms of time. But to look at the three-dimensional filtration flow, a lot more geological and physical data is required. Obtaining such information raises complex issues.

Currently, the methods and software packages created on the basis of the modeling of the processes of the development of gas fields under water pressure and the theory of control of systems and the control of parameters with a clear physical basis allow for the research of arbitrary issues of this type.

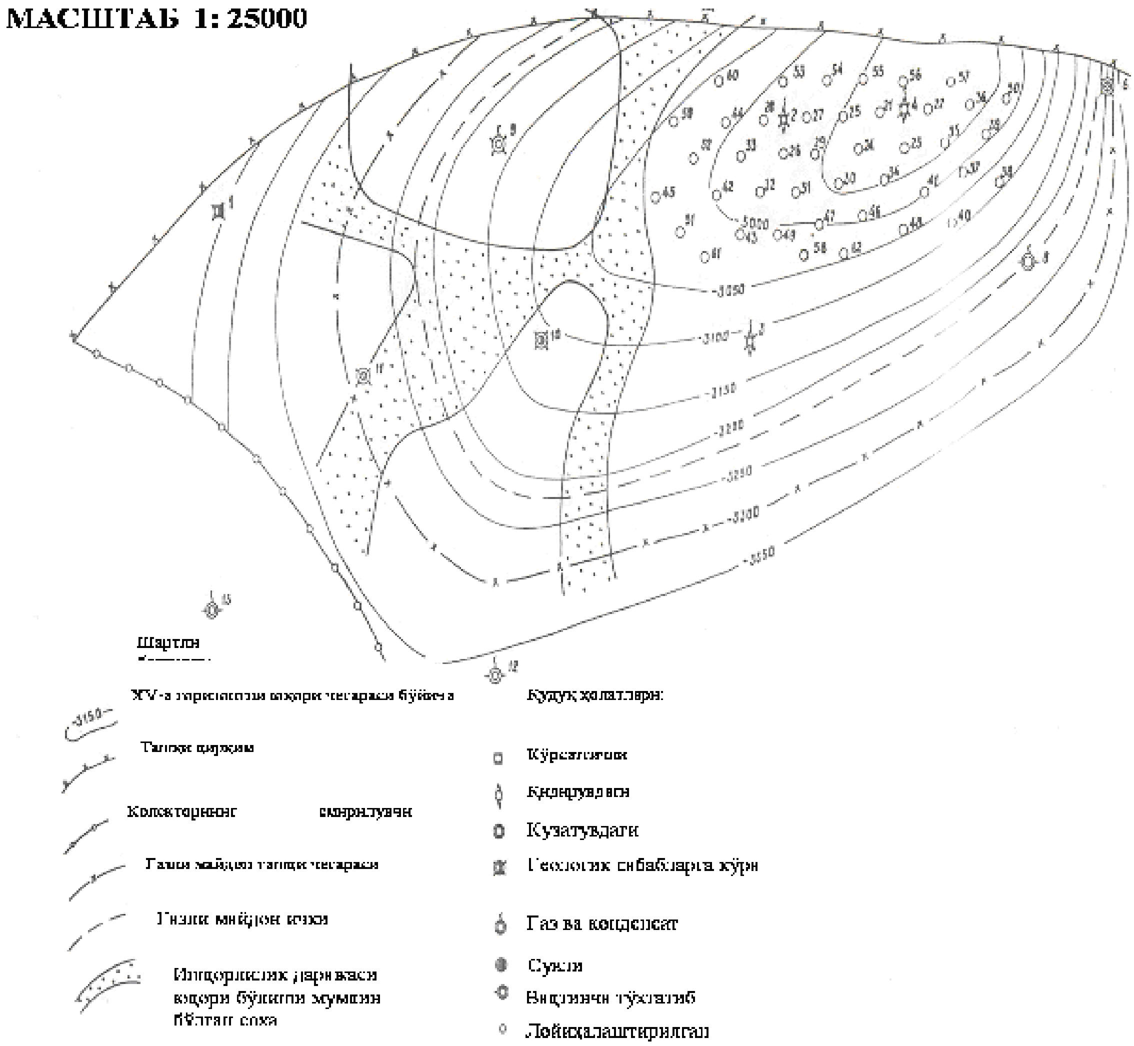
This scientific research work envisages the determination of development indicators in natural gas fields, the construction of a mathematical model, and the creation of calculation algorithms based on modern information technologies. At the same time, on the basis of control models of the optimal movement of gas-water boundaries in systems, predicting the change of the main parameters and obtaining positive results for the automation of complex objects and the theoretical and practical aspects of optimal control, and making decisions based on the obtained results, as well as opening wide opportunities for new practical works. researches management issues.

Information about the mine. The administrative office of the Northern Nishon mine is located in the Nishon district of the Kashkadarya region of the Republic of Uzbekistan. The eastern 30 km of the region. "Shortan" gas processing plant and "Shortan" gas condensate mine are located in Geological exploration and monitoring works in the mine started in 1977, and these works have been completed now. The structural map of the mine is presented in Figure 1.

Well No. 2 was the first to be opened in the North Nishan field, and as a result of the tests conducted in this well in 1981, an industrial gas stream with condensate was obtained. From 1977 to 1991, 13 prospecting and monitoring wells were dug as a result of the work carried out in the mine. Five of them (No. 2, 3, 4, 8, 9) corresponded to the productive part, i.e. industrial gas flow, and one (№. 10) did not reach the productive part due to the strongly erosive alkaline environment underground, seven of the wells (№. 1, 5, 6, 7, 11, 12, 13) fell outside the boundary of the gas field.

Currently, the condition of the field is as follows: Another huge investment project in the oil and gas sector of the Republic of Uzbekistan was organized by foreign investors. The Uzbek-Swiss joint venture "Gissarneftgaz" has started industrial development in the North Guzar and North Nishon gas fields located in the south-west of Uzbekistan.

In May 2005, the national holding company "Uzbekneftgaz" together with the company Zeromax GmbH, registered in Switzerland, started work under the name of the joint venture "Gissarneftgaz" Uzbek-Swiss OJSC. In May 2005, two licensed areas of Tagam-Northern Tandirchi zone, Hissar region, hard-to-exploit fields, North Nishan, Qamashi, Beshkent, North Guzar and Shakarbulok Bukhara-Khiva oil and gas zone regions were officially handed over to the company. Both licensed fields are located in the south-west of the Kashkadarya region of Uzbekistan. According to the project, the annual development capacity of the North Nishan mine will reach 2 billion cubic meters by 2010. In total, 30 billion cubic meters of natural gas, 1 mln. tons of gas condensate and 500,000 tons of oil are planned.



1-расм. Шимолий Нишон конининг структуравий

Figure 1. Structural structure of the North Nishan deposit

70 million of investment in 2006. $ has been appropriated. In May of this year, part of the investment was directed to exploration and monitoring works in the Hissar region of the Tagam-North Tandirchi oil and gas zone.

In 2007, the joint venture spent 60 million dollars on exploration and production of oil and gas fields in Uzbekistan. allocated $ investment. Swiss investment in the general project is 400 million for 25 years. intended to allocate $ [2].

Initial data obtained from the mine core analysis to predict the main parameters of the North Nishan mine are presented in Table 1.

Table 1. The main parameters of gas condensate piles in the mine

№	Names of parameters	Unit of measure	Parameter value
1.	Length	km	11
2.	Width	km	5.0
3.	Height	м	400
4.	Viscosity coefficient	millidarci	232
5.	Porosity coefficient		0.092
6.	Gas saturation coefficient		0.72
7.	Layer pressure	kg/sm^2	550
8.	Layer temperature	^0C	127,4
9.	Critical parameters - P_{kr} - T_{kr}	 kg/sm^2 К	 47,665 206,61
10.	Density - gas - condensate	 kg/m^3 kg/m^3	 0,669 0,8112
11.	The depth of the gas pile	м	3640
12.	The width of the productive area of the pile	м	28,8
13.	Layer depression	kg/sm^2	150
14.	Working hours of the wells throughout the year	a day	330
15.	Filtration and hydraulic resistance coefficients of "layer-well" systems a b	$\frac{кг/см^2}{минг м^3/сут}$ $\frac{кг/см^2}{минг м^3/сут}$	311,5 0,622
16.	Number of designed wells	unity	35

Calculate the values of the deposit for the entire area based on the functional relationships built to determine the permeability, porosity and height parameters.

In order to construct the functional relationships of the North Target gas field, information on the depth of the upper limits of a certain horizon is needed. These data are measured by wells. To draw equal lines for the selected parameter, their value at each node is needed [1].

In the construction of functional relationships of permeability k(x,y) and porosity m(x,y) coefficients for a two-dimensional grid, new methods of analysis and synthesis are used to identify functional relationships for smoothing experimental data [3]. The construction of contour lines representing permeability, porosity and elevations is carried out using information obtained from well surveys and core analyses. Of course, it is considered here from the point of view of the expert's geological, geophysical, hydrodynamic and other knowledge. All this is taken into account when constructing the field of values of these parameters. On the map, the wells are given with their numerical values (Figure 2).

These parameters are entered into the computer without processing. In addition, their values must be given at each node of the grid area. Manufacturers do not have such information. Interpolation formulas were used to find the values of the parameters at each node of the grid region. Using the theory of interpolation, functional dependences of the studied parameters (viscosity, porosity, height) on the abscissa and ordinate axes of the Cartesian coordinate are established. A field of

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parameters corresponding to each node of the grid region is created according to the established functional relationship.

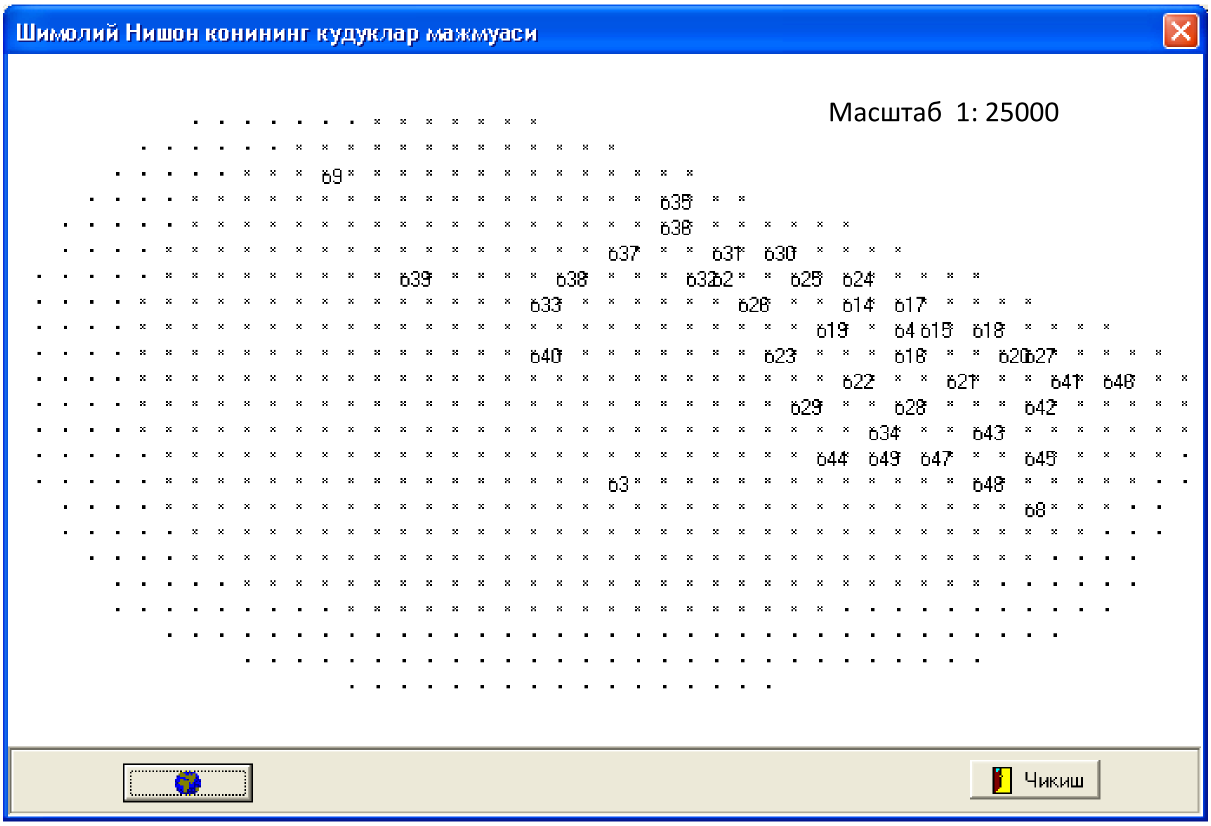

Figure 2. Complex of wells of North Nishan mine

Figure 2 shows the results of the computer generated software, which allows for the creation of a similar map for an arbitrary mine of the republic at a given time. The algorithm block diagram of the program is presented in Appendix 7.

The coordinates of the used wells are determined from the structural map of the mine. In geological reports, any information about a well is assigned to the identified well number, which defines the location of the well coordinates. Their monthly or quarterly (sometimes even daily) values are given in the annual reports of the mine management geological department.

The values of permeability and porosity coefficients determined in existing wells in the North Target field are given in Table 1. These data are placed in the specified order in the file **gov_yop.brl.** The coordinates of the wells of the mine are given. The program for constructing the field kh, mh according to functional dependence is located in the module file **kh_mh.pas.** The program works together with a number of software packages, but autonomously during data preparation. Several module programs are used in the **kh_mh1.pas** module. The names and functions of the modular programs used during the creation of functional relationships of filtration parameters are given below.

The control program is located in the **kh_mh.pas** module under the name main.pas. Reference to module programs located in this module is done with **kh_mh1.pas.** The **funk_zav** component program is designed to create parameter dependencies, which can be accessed using **ml.pas.**

The mpl procedure calculates the parameters at each point of the allocated field. From the **ml.pas** modular program, the gauss part program is used to solve the system of equations using the Gaussian method [4].

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The well procedure is aimed at preparing well coordinates from the **coord.brl** dataset. As a result of the operation of the interpolation program on the actual values, the values of permeability and porosity coefficients at all nodes of the grid area are determined. The results are shown in Figures 3 and 4. **field_k.nat** – the value of the permeability field, **field_m.nat** – the value of the porosity field.

0	0	0	0	0,129	0,131	0,13	0,126	0,117	0,109	0,103	0,1	0	0	0	0	0	0	0	0	0
0	0	0,124	0,126	0,129	0,132	0,133	0,128	0,119	0,108	0,103	0,099	0	0	0	0	0	0	0	0	0
0	0,123	0,124	0,125	0,128	0,133	0,135	0,131	0,12	0,071	0,102	0,098	0,095	0	0	0	0	0	0	0	0
0	0,122	0,123	0,124	0,128	0,134	0,138	0,136	0,123	0,109	0,102	0,097	0,094	0	0	0	0	0	0	0	0
0,121	0,122	0,122	0,123	0,126	0,134	0,141	0,141	0,126	0,082	0,101	0,096	0,093	0	0	0	0	0	0	0	0
0,121	0,121	0,122	0,123	0,085	0,135	0,09	0,149	0,082	0,111	0,073	0,095	0,092	0,09	0	0	0	0	0	0	0
0,12	0,121	0,122	0,123	0,126	0,134	0,149	0,16	0,133	0,111	0,087	0,094	0,091	0,089	0	0	0	0	0	0	0
0,12	0,12	0,121	0,123	0,126	0,075	0,149	0,84	0,133	0,109	0,098	0,087	0,09	0,088	0,086	0	0	0	0	0	0
0,119	0,12	0,121	0,122	0,125	0,131	0,143	0,152	0,128	0,028	0,097	0,092	0,089	0,087	0,084	0	0	0	0	0	0
0,118	0,119	0,12	0,121	0,124	0,128	0,077	0,136	0,12	0,103	0,095	0,09	0,088	0,085	0,083	0	0	0	0	0	0
0,117	0,118	0,119	0,12	0,121	0,123	0,125	0,123	0,074	0,1	0,088	0,09	0,092	0,084	0,082	0,08	0	0	0	0	0
0,116	0,117	0,117	0,118	0,119	0,119	0,095	0,076	0,106	0,096	0,091	0,088	0,085	0,082	0,08	0,079	0	0	0	0	0
0,115	0,115	0,116	0,116	0,116	0,115	0,112	0,108	0,101	0,027	0,089	0,086	0,086	0,074	0,078	0,077	0,076	0	0	0	0
0,114	0,114	0,114	0,113	0,113	0,111	0,09	0,104	0,097	0,09	0,087	0,09	0,082	0,079	0,077	0,076	0,075	0	0	0	0
0,113	0,113	0,112	0,112	0,11	0,108	0,105	0,1	0,066	0,089	0,086	0,083	0,08	0,077	0,076	0,075	0,074	0	0	0	0
0,111	0,111	0,11	0,109	0,108	0,105	0,102	0,098	0,092	0,088	0,076	0,081	0,078	0,075	0,068	0,074	0,074	0	0	0	0
0,11	0,109	0,108	0,107	0,105	0,103	0,1	0,096	0,091	0,087	0,083	0,08	0,068	0,073	0,073	0,073	0,073	0,073	0	0	0
0,112	0,111	0,109	0,107	0,105	0,102	0,099	0,095	0,09	0,086	0,082	0,079	0,075	0,011	0,072	0,072	0,072	0,072	0	0	0
0,11	0,108	0,107	0,104	0,102	0,1	0,097	0,093	0,089	0,085	0,081	0,078	0,075	0,094	0,072	0,072	0,072	0,072	0,072	0	0
0,081	0,081	0,081	0,081	0,08	0,08	0,078	0,076	0,074	0,074	0,073	0,072	0,071	0,07	0,07	0,075	0,068	0,07	0,07	0	0
0,082	0,082	0,082	0,082	0,082	0,082	0,079	0,077	0,076	0,075	0,074	0,073	0,072	0,071	0,07	0,07	0,07	0,07	0,07	0	0
0,083	0,083	0,083	0,083	0,083	0,09	0,08	0,078	0,076	0,075	0,074	0,073	0,072	0,071	0,065	0,07	0,071	0,071	0,071	0,071	0
0,083	0,083	0,083	0,083	0,083	0,082	0,08	0,077	0,076	0,075	0,074	0,073	0,072	0,071	0,07	0,07	0,07	0,07	0,071	0,071	0
0,082	0,082	0,082	0,082	0,082	0,082	0,079	0,077	0,076	0,075	0,075	0,074	0,073	0,062	0,07	0,07	0,071	0,071	0,071	0,072	0
0,084	0,084	0,084	0,084	0,084	0,083	0,081	0,079	0,078	0,077	0,084	0,076	0,094	0,072	0,071	0,071	0,071	0,071	0,072	0,072	0,073
0,083	0,083	0,083	0,083	0,083	0,082	0,08	0,078	0,077	0,077	0,077	0,076	0,075	0,072	0,071	0,071	0,071	0,072	0,073	0,073	0,074
0,085	0,085	0,085	0,084	0,084	0,083	0,081	0,079	0,078	0,077	0,077	0,076	0,074	0,073	0,072	0,072	0,072	0,073	0,074	0,074	0,075
0,086	0,085	0,085	0,085	0,084	0,083	0,081	0,08	0,078	0,077	0,077	0,076	0,074	0,073	0,072	0,073	0,073	0,075	0,075	0,076	0,076
0,086	0,086	0,085	0,085	0,084	0,083	0,081	0,08	0,079	0,078	0,077	0,076	0,074	0,073	0,073	0,074	0,075	0,076	0,077	0,078	0,078
0,087	0,087	0,087	0,086	0,086	0,085	0,083	0,082	0,081	0,08	0,079	0,078	0,076	0,067	0,075	0,077	0,079	0,081	0,082	0,082	0,081
0,087	0,087	0,086	0,086	0,085	0,084	0,083	0,081	0,08	0,079	0,078	0,076	0,075	0,074	0,075	0,077	0,08	0,082	0,083	0,082	0,082
0,087	0,087	0,086	0,086	0,085	0,084	0,083	0,081	0,08	0,079	0,078	0,077	0,075	0,075	0,076	0,078	0,082	0,085	0,086	0,085	0,085
0,087	0,086	0,086	0,085	0,084	0,083	0,082	0,081	0,08	0,079	0,078	0,076	0,075	0,075	0,077	0,079	0,083	0,092	0,086	0,086	0,086
0,081	0,081	0,08	0,08	0,08	0,08	0,08	0,079	0,079	0,078	0,078	0,077	0,076	0,076	0,078	0,081	0,085	0,087	0,088	0,087	0,087
0,081	0,08	0,08	0,08	0,08	0,08	0,08	0,079	0,079	0,078	0,078	0,077	0,077	0,077	0,079	0,082	0,085	0,087	0,088	0,088	0,087
0,08	0,08	0,08	0,08	0,08	0,08	0,079	0,079	0,079	0,078	0,077	0,077	0,077	0,078	0,079	0,082	0,085	0,087	0,087	0,088	0,088
0,08	0,08	0,08	0,08	0,08	0,08	0,079	0,079	0,078	0,078	0,077	0,077	0,077	0,078	0,08	0,082	0,085	0,086	0,087	0,087	0,088
0,08	0,08	0,08	0,08	0,08	0,079	0,079	0,079	0,078	0,078	0,078	0,077	0,078	0,079	0,08	0,082	0,084	0,086	0,087	0,087	0,087
0,08	0,08	0,08	0,08	0,079	0,079	0,079	0,079	0,078	0,078	0,078	0,078	0,078	0,079	0,081	0,082	0,084	0,086	0,087	0,087	0
0	0,08	0,08	0,08	0,079	0,079	0,079	0,079	0,078	0,078	0,078	0,078	0,078	0,079	0,081	0,083	0,084	0,086	0,087	0,087	0
0	0,08	0,08	0,079	0,079	0,079	0,079	0,078	0,078	0,078	0,078	0,078	0,079	0,08	0,081	0,083	0,084	0,085	0,086	0	0
0	0	0	0,079	0,079	0,079	0,079	0,078	0,078	0,078	0,078	0,078	0,079	0,08	0,081	0,083	0,084	0,085	0	0	0
0	0	0	0	0,079	0,079	0,079	0,078	0,078	0,078	0,078	0,079	0,079	0,08	0,081	0,083	0,084	0	0	0	0
0	0	0	0	0	0	0,079	0,078	0,078	0,078	0,078	0,079	0,079	0,08	0,081	0	0	0	0	0	0

Figure 3. Developed based on available values from North Nishan field wells values of the porosity area

0	0	0	0	0	0	0	0	0,106	0,122	0,1	0,094	0,1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0,017	0,054	0,101	0,143	0,106	0,094	0,105	0,135	0	0	0	0	0	0	0	0	0
0	0	0	0	0,013	0,013	0,015	0,054	0,098	0,176	0,123	0,094	0,121	0,161	0	0	0	0	0	0	0	0	0
0	0	0	0,013	0,013	0,013	0,014	0,054	0,096	0,195	0,199	0,085	0,188	0,169	0,134	0	0	0	0	0	0	0	0
0	0	0	0,013	0,013	0,013	0,014	0,054	0,095	0,191	0,374	0,502	0,311	0,142	0,123	0	0	0	0	0	0	0	0
0	0	0,013	0,013	0,013	0,013	0,013	0,056	0,094	0,207	0,283	0,931	0,173	0,128	0,115	0	0	0	0	0	0	0	0
0	0	0,014	0,013	0,013	0,013	0,013	0,066	0,092	0,348	0,219	0,759	0,091	0,13	0,109	0,1	0	0	0	0	0	0	0
0	0	0,014	0,014	0,014	0,014	0,017	0,086	0,125	0,666	0,254	0,333	0,23	0,115	0,105	0,088	0	0	0	0	0	0	0
0	0,014	0,014	0,015	0,015	0,018	0,052	0,09	0,23	0,73	0,367	0,07	0,206	0,104	0,098	0,067	0,05	0	0	0	0	0	0
0	0,015	0,015	0,016	0,019	0,031	0,078	0,086	0,055	0,668	0,19	0,045	0,309	0,102	0,075	0,054	0,042	0	0	0	0	0	0
0	0,016	0,017	0,02	0,027	0,051	0,081	0,055	0,011	0,216	0,03	0,093	0,784	0,09	0,055	0,049	0,037	0	0	0	0	0	0
0	0,018	0,02	0,026	0,039	0,066	0,074	0,055	0,052	0,05	0,017	0,266	0,965	0,046	0,05	0,042	0,038	0,073	0	0	0	0	0
0	0,021	0,025	0,035	0,053	0,072	0,073	0,079	0,092	0,046	0,023	0,091	0,848	0,14	0,08	0,029	0,055	0,11	0	0	0	0	0
0	0,025	0,033	0,047	0,065	0,073	0,074	0,077	0,077	0,05	0,051	0,043	0,497	0,585	0,102	0,013	0,133	0,133	0,109	0	0	0	0
0	0,033	0,044	0,06	0,07	0,072	0,071	0,068	0,065	0,065	0,089	0,049	0,329	0,701	0,188	0,477	0,294	0,106	0,117	0	0	0	0
0	0,044	0,055	0,065	0,069	0,069	0,068	0,066	0,065	0,08	0,093	0,072	0,107	0,648	0,409	0,973	0,148	0,081	0,197	0	0	0	0
0,046	0,051	0,055	0,059	0,063	0,066	0,066	0,066	0,065	0,087	0,093	0,078	0,071	0,312	0,122	0,766	0,066	0,076	0,506	0	0	0	0
0,05	0,051	0,052	0,052	0,053	0,056	0,061	0,065	0,066	0,089	0,093	0,076	0,073	0,107	0,061	0,188	0,053	0,132	0,858	0,959	0	0	0
0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,054	0,064	0,089	0,092	0,075	0,073	0,082	0,107	0,065	0,01	0,478	0,951	0,965	0	0	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,081	0,091	0,076	0,075	0,113	0,389	0,907	0,134	0,884	0,964	0,966	0,966	0	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,055	0,106	0,135	0,13	0,234	0,645	0,805	0,428	0,937	0,967	0,967	0,967	0	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,375	0,609	0,606	0,404	0,682	0,578	0,167	0,892	0,965	0,966	0,966	0	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,619	0,685	0,679	0,383	0,459	0,429	0,109	0,554	0,955	0,966	0,966	0,966	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,054	0,671	0,687	0,685	0,364	0,278	0,669	0,146	0,265	0,911	0,963	0,966	0,966	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,066	0,683	0,687	0,686	0,358	0,087	0,713	0,411	0,212	0,786	0,953	0,963	0,963	0
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,109	0,686	0,687	0,687	0,356	0,022	0,647	0,614	0,281	0,61	0,925	0,946	0,899	0,764
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,225	0,686	0,687	0,686	0,356	0,033	0,458	0,643	0,425	0,477	0,749	0,539	0,289	0,162
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,397	0,687	0,687	0,685	0,357	0,056	0,395	0,619	0,565	0,328	0,082	0,041	0,032	0,029
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,054	0,533	0,687	0,686	0,68	0,374	0,39	0,616	0,627	0,618	0,098	0,023	0,022	0,022	0,022
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,064	0,606	0,686	0,686	0,672	0,5	0,619	0,63	0,63	0,612	0,038	0,022	0,022	0,022	0,022
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,09	0,642	0,686	0,684	0,658	0,608	0,629	0,63	0,63	0,573	0,025	0,022	0,022	0,022	0,022

0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,051	0,142	0,659	0,686	0,681	0,64	0,626	0,63	0,63	0,63	0,441	0,022	0,022	0,022	0,022	0,022
0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,054	0,224	0,668	0,684	0,674	0,63	0,629	0,63	0,63	0,63	0,211	0,022	0,022	0,022	0,022	0,022
0	0,05	0,05	0,05	0,05	0,05	0,05	0,06	0,321	0,673	0,682	0,66	0,629	0,63	0,63	0,63	0,627	0,079	0,022	0,022	0,022	0,022	0,022
0	0,687	0,687	0,687	0,687	0,687	0,687	0,686	0,686	0,685	0,677	0,644	0,629	0,63	0,63	0,63	0,615	0,04	0,022	0,022	0,022	0,022	0,022
0	0,687	0,687	0,687	0,687	0,687	0,687	0,686	0,685	0,682	0,666	0,635	0,63	0,63	0,63	0,63	0,566	0,029	0,022	0,022	0,022	0,022	0,022
0	0,687	0,687	0,687	0,687	0,687	0,686	0,686	0,684	0,677	0,653	0,632	0,63	0,63	0,63	0,628	0,451	0,026	0,022	0,022	0,022	0,022	0,022
0	0	0,687	0,687	0,687	0,686	0,686	0,685	0,682	0,669	0,642	0,631	0,63	0,63	0,63	0,623	0,302	0,025	0,022	0,022	0,022	0,022	0,022
0	0	0,687	0,687	0,686	0,686	0,686	0,684	0,678	0,659	0,636	0,63	0,63	0,63	0,629	0,607	0,187	0,024	0,022	0,022	0,022	0,022	0,022
0	0	0,687	0,687	0,686	0,686	0,685	0,681	0,671	0,649	0,633	0,63	0,63	0,63	0,628	0,573	0,118	0,024	0,022	0,022	0,022	0,022	0
0	0	0	0,686	0,686	0,685	0,683	0,678	0,662	0,641	0,631	0,63	0,63	0,629	0,624	0,513	0,081	0,023	0,022	0,022	0,022	0,022	0
0	0	0	0,686	0,686	0,684	0,681	0,672	0,653	0,636	0,631	0,63	0,63	0,629	0,615	0,43	0,061	0,023	0,022	0,022	0,022	0	0
0	0	0	0	0	0,683	0,678	0,665	0,646	0,634	0,63	0,63	0,63	0,627	0,599	0,34	0,049	0,023	0,022	0,022	0	0	0
0	0	0	0	0	0	0,673	0,657	0,64	0,632	0,63	0,63	0,629	0,624	0,572	0,26	0,042	0,023	0,022	0	0	0	0
0	0	0	0	0	0	0	0	0,636	0,631	0,63	0,63	0,628	0,618	0,532	0,197	0,037	0	0	0	0	0	0

Figure 4. Developed based on available values from North Nishan field wells values of the conductivity field

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